MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 3, 2015/2016

HPC2011 – INTRODUCTORY COURSE IN PHARMACOLOGY

(All section / Groups)

31st MAY 2016
9.00 a.m. – 11.00 a.m
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 5 pages with 8 Questions only.
2. Attempt **SIX** out of **EIGHT** questions. All questions carry equal marks and the distribution of the marks for each question is given.
3. Please print all your answers in the Answer Booklet provided.

Question 1

a. List all types of receptor found in human body.

[2 marks]

b. With the aid of diagram, briefly explain the processes involved in a second messenger system that is associated with the G-protein-coupled adrenoceptor?

[4 marks]

c. Name the growth factors involved in angiogenesis.

[1 mark]

d. Jan Brown is a 55 years old teacher with hypercalcemia.

i. Describe which route/channel was the calcium ion (Ca2+) take place to enter the nerves and muscle cells across blood plasma membrane?

[1 mark]

ii. Explain the effect of high calcium level in his blood vessels and kidney.

[2 marks]

Question 2

a. State any two ways, how does a small molecule travel across the cell membrane.

[2 marks]

b. Aspirin is better absorbed in the stomach with gastric pH in an acidic environment. However, most of the aspirin is excreted and ionized in urine.

i. What is the phenomenon at this condition? **[1 mark]**

ii. Briefly explain why this condition happened. **[2.5 marks]**

c. Name the major sites of drug excretion.

[1.5 marks]

d. Why are cytochrome P450 enzymes important in drug metabolism?

[1.5 marks]

e. Kent Dickson who has asthma is order timolol eye drops to treat acute closed angle glaucoma. What is the problem associated with this order?

[1.5 marks]

Continued...

Question 3

a. Medicine D is a new drug candidate for breast cancer treatment. In order to get approval, what must pharmaceutical company be able to demonstrate regarding a new drug development?

[3 marks]

b. GPCR (G protein-coupled receptors) are the largest group of membrane receptors in eukaryotes. Name the technique that can be used to screen the ability of compound to modify the GPCR as target.

[1 mark]

c. Describe the term "Bioassay"

[1 mark]

d. Vinblastine is a vinca alkaloid cytotoxic agent used for variety of tumors and hematological malignancies. How does vinblastine act during the mitosis?

[2 marks]

e. John Dow, 56 years old, is about to commence treatment with hormonal agent nafarelin for prostate cancer. Explain in brief, how does the drug works in managing prostate cancer?

[3 marks]

Question 4

a. Mr X age 58 years is ordered a course of bosentan therapy to treat pulmonary hypertension.

i. What are the biochemical parameters to be monitored during therapy?

[2 marks]

ii. What are the common adverse effects that may arise with the use of bosentan?

[2 marks]

b. Describe three forms of the nitric oxide synthase (NOS). **[3 marks]**

c. State two types of adverse drug reactions. **[1 mark]**

d. State four roles of serotonin in the central nervous system. **[2 marks]**

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Question 5

A 23-year-old woman presents to the office for consultation regarding her antiseizure medication. Seven years ago, she had a generalized tonic-clonic seizure (GTCS) at home. She was rushed to the emergency department. A consulting neurologist placed her on Levetiracetam 500 mg bid. Four days later EEG showed rare right temporal sharp waves but MRI was normal.

a. What CNS disorder does this woman have? **[1 mark]**

b. With the aid of a diagram, discuss the potential molecular targets at the excitatory, glutamatergic synapse in order to explain the mode of action for drugs used in treating this disorder. **[7.5 marks]**

c. List 3 adverse effects of drugs used in treatment of this disorder. **[1.5 marks]**

Question 6

a. Define the term "Parasympathomimetics drugs" and "Sympatholytics drugs" **[2 marks]**

b. Discuss how drugs may modify the **cholinergic** neurotransmission in autonomic nervous system (ANS) **[5 marks]**

c. Draw a diagram to illustrate the main sites of action of drugs that affect **adrenergic** neurotransmission in autonomic nervous system (ANS). **[3 marks]**

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Question 7

MRSA is *Staphylococcus aureus* that is resistant to streptomycin, aminoglycosides, chloramphenicol, trimethoprim, sulfonamides, rifampicin, fusidic acid and quinolones. This multidrug resistant super bug has been a common nosocomial infection among hospitalized patients.

a. State any four sites, how do bacteria such as *Staphylococcus aureus* acquire drug resistance capability?
Discuss your answer. **[4 marks]**

b. Explain the mode of action of four groups of antibiotic with example. **[4 marks]**

c. Mr. Jaya, age 38 years, is taking a combined sulfonamide and trimethoprim preparation for a gonorrhea infection. Is he allowed to take combination of both antibiotics? Advice his medication plans with combination of both antibiotics.
Discuss your answer. **[2 marks]**

Question 8

Cardiac failure is essentially a reduction of cardiac output in spite of adequate venous filling, the reduced output becoming insufficient to perfuse the tissues.

a. Illustrate the pathophysiology of cardiac failure with focus on how the regulations of blood pressure by kidney worsen the outcome. **[5 marks]**

b. Based on the pathophysiology of cardiac failure, what are the four modes of action for drugs in cardiac failure **[2 marks]**

c. β- adrenoreceptor have been widely used in the management of hypertension. Describe the β-adrenoreceptor blocker mechanism in hypertension patient. **[3 marks]**

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